

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-16. canceled

17. (new) A method for improving estimates of average background noise energy in a G.729 Annex B compliant voice activity detection (VAD) device by substituting supplemental average background noise parameters derived according to a supplemental algorithm for a running average of background noise parameters derived according to G.729 Annex B, comprising:

determining a maximum full-band energy, E_{\max} , and a minimum full-band energy, E_{\min} , from a plurality of incoming noise frames during a current period, i ;

generating a noise threshold, $T_{\text{noise}, i+1}$, for the next period, such that $T_{\text{noise}, i+1} = \min(2 * \min(T_1, T_2), -21 \text{ dBm})$, where $T_1 = E_{\min} + (E_{\max} - E_{\min})/32$, $T_2 = 4 * E_{\min}$, E_{\max} = the maximum block energy measured during the current updating period, and E_{\min} = the minimum block energy measured during the current updating period;

determining a full-band energy of a current incoming noise frame, E_i ;

updating supplemental average background noise parameters to the current period;

comparing the supplemental average background noise parameters of the current period to the running average of background noise parameters derived according to G.729 Annex B; and

if the supplemental average background noise parameters of the current period diverge from the running average of the background noise parameters derived according to G.729 Annex B, then substituting the supplemental average background noise parameters of the current period for the running average of the background noise parameters derived according to G.729 Annex B.

18. (new) The method of claim 17, wherein the running average of the background noise parameters derived according to G.729 Annex B is updated for an incoming noise frame, only if $E_f < E_{f,avg} + 3\text{dB}$, $RC(1) < 0.75$, and $\Delta SD < 0.0637$, where E_f = the full-band noise of the current frame and is calculated according to the equation $E_f = 10 \times \log_{10} [1/240 \times R(0)]$, where $R(0)$ is the first autocorrelation coefficient, $E_{f,avg}$ = the average full-band noise energy, $RC(1)$ = the first reflection coefficient, and ΔSD = the difference between the measured spectral distance for the current frame and the running average value of the spectral distance, with a ΔSD of 0.0637 corresponding to 254.6 Hz.

19. (new) The method of claim 17, wherein the supplemental average background noise parameters derived according to the supplemental algorithm include full-band energy, low-band energy, a set of Line Spectral Frequencies, and a zero crossing rate for each period.

20. (new) The method of claim 17, wherein the running average of the background noise G.729 Annex B include full-band energy, low-band energy, a set of Line Spectral Frequencies, and a zero crossing rate for each incoming noise frame.

21. (new) The method of claim 17, wherein the updating supplemental average background noise parameters occurs immediately after the determining a full-band energy of a current incoming noise frame, E_i , if $T_{noise, i-1} \geq E_i \geq -70 \text{ dBm}$ is true, and occurs after a fixed waiting period, if $T_{noise, i-1} \geq E_i \geq -70 \text{ dBm}$ is not true.

22. (new) The method of claim 17, further comprising:
waiting an elapsed time period to compare the updated supplemental average background noise parameters to the running average of the background noise parameters derived according to G.729 Annex B.

23. (new) The method of claim 22, wherein the waiting an elapsed time period includes using a counter that counts a consecutive number of incoming noise frames, which are not updated according to the method of claim 18.

24. (new) The method of claim 17, wherein every period including the current period and the next period equals 1.28 seconds.